

DAVI172SequenceListing.txt  
SEQUENCE LISTING

<110> Dale, James Langham  
Echeverria, Santy Peraza  
<120> BANANA RESISTANCE GENES AND USES THEREOF  
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<140> 10/573,372  
<141> 2006-10-31  
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<151> 2004-09-23  
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cag acg ttg ctc gac aag gcc agc aac tgc gcg atc caa caa ctc gcg Gln Thr Leu Leu Asp Lys Ala Ser Asn Cys Ala Ile Gln Gln Leu Ala 20 25 30	96
cgg cgc cgc ggc ctt cac gat gac ctg agg cgg ctg cgg acg tct ctg Arg Arg Arg Gly Leu His Asp Asp Leu Arg Arg Leu Arg Thr Ser Leu 35 40 45	144
ctc cgg atc cat gcc atc ctc gac aag gca gag acg agg tgg aac cat Leu Arg Ile His Ala Ile Leu Asp Lys Ala Glu Thr Arg Trp Asn His 50 55 60	192
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caa aag gtc gag cac cgg gga gac gag ata agc gac ctc ttt tct ttt Gln Lys Val Glu His Arg Gly Asp Gln Ile Ser Asp Leu Phe Ser Phe 100 105 110	336
tcc ctt agt act gcg agc gag tgg ttg ggt gcc gat ggt gat gat gct Ser Leu Ser Thr Ala Ser Glu Trp Leu Gly Ala Asp Gly Asp Asp Ala	384

ggg act cga ttg agg gag atc cag ggg aag ctg tgc aac att gct gcc Gly Thr Arg Leu Arg Glu Ile Gln Gly Lys Leu Cys Asn Ile Ala Ala 130 135 140	432
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ctc gtc gga atc gga ggg gtt ggg aag acg act ctg gct cag ctc gtg Leu Val Gly Ile Gly Val Gly Lys Thr Thr Leu Ala Gln Leu Val 210 215 220	672
tac aac gac aat cgt gtc ggc aac tat ttc cac ctc aag gtt tgg gtc Tyr Asn Asp Asn Arg Val Gly Asn Tyr Phe His Leu Lys Val Trp Val 225 230 235 240	720
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DAVI172SequenceListing.txt  
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Glu Ile Leu Pro Val Leu Trp Leu Ser Tyr Gln His Leu Pro Gly His  
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Leu Arg Gln Cys Phe Ala Phe Cys Ala Val Phe His Lys Asp Tyr Leu  
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Phe Tyr Lys His Glu Leu Ile Gln Thr Trp Ile Ala Glu Gly Phe Ile  
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His Glu Leu Val Asn Arg Ser Phe Phe Gln Glu Ser Arg Trp Arg Gly  
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Arg Tyr Val Met His Asp Leu Ile His Asp Leu Ala Gln Phe Ile Ser  
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Val Gly Glu Cys His Arg Ile Asp Asp Asp Lys Ser Lys Glu Thr Pro  
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DAVI172SequenceListing.txt									
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ctc cca aat ctt gga caa ctt cca cat ctt aag gtt att cac atg aag Leu Pro Asn Leu Gly Gln Leu Pro His Leu Lys Val Ile His Met Lys 915 920 925	2784
aac atg tct gca ctg aaa ctt ata ggt cgt gaa tta tgt gat tct aga Asn Met Ser Ala Leu Lys Leu Ile Gly Arg Glu Leu Cys Asp Ser Arg 930 935 940	2832
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Arg Asn Leu Gly Glu G1y 1145 1150 Leu Ser Asn His Leu Pro His Ile					
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at gct att cgg ata tgg gaa tgt gct gaa ctg ttg tgg ctg cct					3519
Asn Ala Ile Arg Ile Trp Glu 1160 1165 Cys Ala Glu Leu Leu Trp Leu Pro					
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gtc aag agg ttt aga gaa ttc acc acc ctt gag aac ttg tca ata					3564
Val Ala Arg Phe Arg Glu 1175 1180 Phe Thr Thr Leu Glu Asn Leu Ser Ile					
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Arg Asn Cys Pro Lys Leu 1190 1195 Met Ser Met Thr Gln Cys Glu Glu Asn					
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Asp Leu Leu Leu Pro Pro 1205 1210 Leu Ile Lys Ala Leu Glu Leu Gly Asp					
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Cys Gly Asn Leu Gly Lys Ser 1220 1225 Leu Pro Gly Cys Leu His Asn Leu					
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Ser Ser Leu Thr Gln Leu Ala 1235 1240 Ile Ser Asn Cys Pro Tyr Met Val					
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Ser Leu Pro Arg Glu Val 1250 1255 Met Leu His Leu Lys Glu Leu Gly Thr					
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gta agg atc gag aat tgt gat ggg ctg gga tca ata gag ggt tta					3834
Val Arg Ile Glu Asn Cys Asp 1265 1270 Gly Leu Gly Ser Ile Glu Gly Leu					
1275					
caa gtt ctc aaa tca ctc aag aga ttg gca atc atc gga tgt ccc					3879
Gln Val Leu Lys Ser Leu Lys 1280 1285 Arg Leu Ala Ile Ile Gly Cys Pro					
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agg ctt ttg cta aat gaa ggg gat gag caa ggg gag gtc ttg tca					3924
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Leu Ile Lys Asn Thr Leu Pro 1325 1330 Phe Ile His Ser Leu Arg Ile Ile					
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Trp Ser Pro Gln Lys Val 1340 1345 Met Phe Asp Leu Glu Gln Glu Leu					
1350					
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cgc cat gct ttg gtt gta agt gac tgc cca cag atc caa tca ctg		4194
Leu His Ala Leu Val Val Ser Asp Cys Pro Gln Ile Gln Ser Leu		
1385	1390	1395
ccg gag aag gga ctc ccg aca ctc ctc aca gat tta gga ttt gac		4239
Pro Glu Lys Gly Leu Pro Thr Leu Leu Thr Asp Leu Gly Phe Asp		
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cat tgc cac cca gtg ctg act gcg caa ctg gaa aag cac ctg gca		4284
His Cys His Pro Val Leu Thr Ala Gln Leu Glu Lys His Leu Ala		
1415	1420	1425
gag atg aag agc tca ggt cga ttt cac cca gtt tat gca taggcaacat		4333
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Arg Arg Arg Gly Leu His Asp Asp Leu Arg Arg Leu Arg Thr Ser Leu		
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Leu Arg Ile His Ala Ile Leu Asp Lys Ala Glu Thr Arg Trp Asn His		
50	55	60
Lys Asn Thr Ser Leu Val Glu Leu Val Arg Gln Leu Lys Asp Ala Ala		
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Tyr Asp Ala Glu Asp Leu Leu Glu Glu Leu Glu Tyr Gln Ala Ala Lys		
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Gln Lys Val Glu His Arg Gly Asp Gln Ile Ser Asp Leu Phe Ser Phe		
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Ser Leu Ser Thr Ala Ser Glu Trp Leu Gly Ala Asp Gly Asp Asp Ala		
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Gly Thr Arg Leu Arg Glu Ile Gln Gly Lys Leu Cys Asn Ile Ala Ala  
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Asp Met Met Asp Val Met Gln Leu Leu Ala Pro Asp Asp Gly Gly Arg  
145 150 155 160

Gln Phe Asp Trp Lys Val Val Arg Arg Glu Thr Ser Ser Phe Leu Thr  
165 170 175

Glu Thr Val Val Phe Gly Arg Asp Gln Glu Arg Glu Lys Val Val Glu  
180 185 190

Leu Leu Leu Asp Ser Gly Ser Gly Asn Ser Ser Phe Ser Val Leu Pro  
195 200 205

Leu Val Gly Ile Gly Gly Val Gly Lys Thr Thr Leu Ala Gln Leu Val  
210 215 220

Tyr Asn Asp Asn Arg Val Gly Asn Tyr Phe His Leu Lys Val Trp Val  
225 230 235 240

Cys Val Ser Asp Asn Phe Asn Val Lys Arg Leu Thr Lys Glu Ile Ile  
245 250 255

Glu Ser Ala Thr Lys Val Glu Gln Ser Asp Lys Leu Asn Leu Asp Thr  
260 265 270

Leu Gln Gln Ile Leu Lys Glu Lys Ile Ala Ser Glu Arg Phe Leu Leu  
275 280 285

Val Leu Asp Asp Val Trp Ser Glu Asn Arg Asp Asp Trp Glu Arg Leu  
290 295 300

Cys Ala Pro Leu Arg Phe Ala Ala Arg Gly Ser Lys Val Ile Val Thr  
305 310 315 320

Thr Arg Asp Thr Lys Ile Ala Ser Ile Ile Gly Thr Met Lys Glu Ile  
325 330 335

Ser Leu Asp Gly Leu Gln Asp Asp Ala Tyr Trp Glu Leu Phe Lys Lys  
340 345 350

Cys Ala Phe Gly Ser Val Asn Pro Gln Glu His Leu Glu Leu Glu Val  
355 360 365

Ile Gly Arg Lys Ile Ala Gly Lys Leu Lys Gly Ser Pro Leu Ala Ala  
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370

375

380

Lys Thr Leu Gly Ser Leu Leu Arg Leu Asp Val Ser Gln Glu His Trp  
385 390 395 400

Arg Thr Ile Met Glu Ser Glu Val Trp Gln Leu Pro Gln Ala Glu Asn  
405 410 415

Glu Ile Leu Pro Val Leu Trp Leu Ser Tyr Gln His Leu Pro Gly His  
420 425 430

Leu Arg Gln Cys Phe Ala Phe Cys Ala Val Phe His Lys Asp Tyr Leu  
435 440 445

Phe Tyr Lys His Glu Leu Ile Gln Thr Trp Ile Ala Glu Gly Phe Ile  
450 455 460

Ala His Gln Gly Asn Lys Arg Met Glu Asp Val Gly Ser Ser Tyr Phe  
465 470 475 480

His Glu Leu Val Asn Arg Ser Phe Phe Gln Glu Ser Arg Trp Arg Gly  
485 490 495

Arg Tyr Val Met His Asp Leu Ile His Asp Leu Ala Gln Phe Ile Ser  
500 505 510

Val Gly Glu Cys His Arg Ile Asp Asp Asp Lys Ser Lys Glu Thr Pro  
515 520 525

Ser Thr Thr Arg His Leu Ser Val Ala Leu Thr Glu Gln Met Lys Leu  
530 535 540

Val Asp Phe Ser Gly Tyr Asn Lys Leu Arg Thr Leu Met Ile Asn Asn  
545 550 555 560

Gln Arg Asn Gln Tyr Pro Tyr Met Thr Lys Val Asn Ser Cys Leu Leu  
565 570 575

Pro His Ser Leu Phe Lys Arg Leu Lys Arg Ile His Val Leu Val Leu  
580 585 590

Gln Lys Cys Gly Met Lys Glu Leu Pro Asp Ile Ile Gly Asp Leu Ile  
595 600 605

Gln Leu Arg Tyr Leu Asp Ile Ser Tyr Asn Ala Cys Ile Gln Arg Leu  
610 615 620

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Pro Glu Ser Leu Cys Asp Leu Tyr Asn Leu Gln Ala Leu Arg Leu Trp  
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Gly Cys Gln Leu Arg Ser Phe Pro Gln Gly Met Ser Lys Leu Ile ASN  
 645 650 655

Leu Arg Gln Leu Arg Val Glu Asp Glu Ile Ile Ser Lys Ile Tyr Glu  
 660 665 670

Val Gly Lys Leu Ile Ser Leu Gln Glu Leu Ser Ala Phe Lys Val Leu  
 675 680 685

Asn Asn His Gly Asn Lys Leu Ala Glu Leu Ser Gly Leu Thr Gln Leu  
 690 695 700

Arg Ser Thr Leu Arg Ile Thr Asn Leu Glu Asn Val Gly Ser Lys Glu  
 705 710 715 720

Glu Ala Ser Lys Ala Lys Leu His Arg Lys Gln Tyr Leu Glu Ala Leu  
 725 730 735

Glu Leu Glu Trp Ala Ala Gly Gln Val Ser Ser Leu Glu His Glu Leu  
 740 745 750

Leu Val Ser Glu Glu Val Leu Leu Gly Leu Gln Pro His His Phe Leu  
 755 760 765

Lys Ser Leu Thr Ile Arg Gly Tyr Ser Gly Ala Thr Val Pro Ser Trp  
 770 775 780

Leu Asp Val Lys Met Leu Pro Asn Leu Gly Thr Leu Lys Leu Glu Asn  
 785 790 795 800

Cys Thr Arg Leu Glu Gly Leu Ser Tyr Ile Gly Gln Leu Pro His Leu  
 805 810 815

Lys Val Leu His Met Lys Arg Met Pro Val Val Lys Gln Met Ser His  
 820 825 830

Glu Leu Cys Gly Cys Thr Lys Ser Lys Leu Phe Pro Arg Leu Glu Glu  
 835 840 845

Leu Val Leu Glu Asp Met Pro Thr Leu Lys Glu Phe Pro Asn Leu Ala  
 850 855 860

Gln Leu Pro Cys Leu Lys Ile Ile His Met Lys Asn Met Phe Ala Val  
 865 870 875 880

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Lys His Ile Gly Arg Glu Leu Tyr Gly Asp Ile Glu Ser Asn Cys Phe  
885 890 895

Leu Ser Leu Glu Glu Leu Val Leu Gln Asp Met Leu Thr Leu Glu Glu  
900 905 910

Leu Pro Asn Leu Gly Gln Leu Pro His Leu Lys Val Ile His Met Lys  
915 920 925

Asn Met Ser Ala Leu Lys Leu Ile Gly Arg Glu Leu Cys Asp Ser Arg  
930 935 940

Glu Lys Ile Trp Phe Pro Arg Leu Glu Val Leu Val Leu Lys Asn Met  
945 950 955 960

Leu Ala Leu Glu Glu Leu Pro Ser Leu Asp Asn Phe Arg Val Ser Arg  
965 970 975

Phe Phe Ala Ser Ser Val Glu Val Gly His Gly Leu Phe Ser Ala Thr  
980 985 990

Arg Asn Lys Trp Phe Pro Arg Leu Glu Glu Leu Glu Ile Lys Gly Met  
995 1000 1005

Leu Thr Phe Glu Glu Leu His Ser Leu Glu Lys Leu Pro Cys Leu  
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Lys Val Phe Arg Ile Lys Gly Leu Pro Ala Val Lys Lys Ile Gly  
1025 1030 1035

His Gly Leu Phe Asp Ser Thr Cys Gln Arg Glu Cys Phe Pro Arg  
1040 1045 1050

Leu Glu Asp Leu Val Leu Ser Asp Met Pro Ala Trp Glu Glu Trp  
1055 1060 1065

Ser Trp Ala Glu Arg Glu Glu Leu Phe Ser Cys Leu Cys Arg Leu  
1070 1075 1080

Lys Ile Glu Gln Cys Pro Lys Leu Lys Cys Leu Leu Pro Ile Pro  
1085 1090 1095

His Ser Leu Ile Lys Leu Glu Leu Trp Gln Val Gly Leu Thr Gly  
1100 1105 1110

Leu Pro Gly Leu Cys Lys Gly Ile Gly Gly Ser Ser Thr Arg  
1115 1120 1125

DAVI172SequenceListing.txt

Thr Ala Ser Leu Ser Leu Leu His Ile Ile Lys Cys Pro Asn Leu  
1130 1135 1140

Arg Asn Leu Gly Glu Gly Leu Leu Ser Asn His Leu Pro His Ile  
1145 1150 1155

Asn Ala Ile Arg Ile Trp Glu Cys Ala Glu Leu Leu Trp Leu Pro  
1160 1165 1170

Val Lys Arg Phe Arg Glu Phe Thr Thr Leu Glu Asn Leu Ser Ile  
1175 1180 1185

Arg Asn Cys Pro Lys Leu Met Ser Met Thr Gln Cys Glu Glu Asn  
1190 1195 1200

Asp Leu Leu Leu Pro Pro Leu Ile Lys Ala Leu Glu Leu Gly Asp  
1205 1210 1215

Cys Gly Asn Leu Gly Lys Ser Leu Pro Gly Cys Leu His Asn Leu  
1220 1225 1230

Ser Ser Leu Thr Gln Leu Ala Ile Ser Asn Cys Pro Tyr Met Val  
1235 1240 1245

Ser Leu Pro Arg Glu Val Met Leu His Leu Lys Glu Leu Gly Thr  
1250 1255 1260

Val Arg Ile Glu Asn Cys Asp Gly Leu Gly Ser Ile Glu Gly Leu  
1265 1270 1275

Gln Val Leu Lys Ser Leu Lys Arg Leu Ala Ile Ile Gly Cys Pro  
1280 1285 1290

Arg Leu Leu Leu Asn Glu Gly Asp Glu Gln Gly Glu Val Leu Ser  
1295 1300 1305

Leu Leu Glu Leu Ser Val Asp Lys Thr Ala Leu Leu Lys Leu Ser  
1310 1315 1320

Leu Ile Lys Asn Thr Leu Pro Phe Ile His Ser Leu Arg Ile Ile  
1325 1330 1335

Trp Ser Pro Gln Lys Val Met Phe Asp Leu Glu Glu Gln Glu Leu  
1340 1345 1350

Val His Ser Leu Thr Ala Leu Arg Arg Leu Glu Phe Phe Arg Cys

DAV172SequenceListing.txt  
1355                    1360                    1365

Lys Asn Leu Gln Ser Leu Pro Thr Glu Leu His Thr Leu Pro Ser  
1370                    1375                    1380

Leu His Ala Leu Val Val Ser Asp Cys Pro Gln Ile Gln Ser Leu  
1385                    1390                    1395

Pro Glu Lys Gly Leu Pro Thr Leu Leu Thr Asp Leu Gly Phe Asp  
1400                    1405                    1410

His Cys His Pro Val Leu Thr Ala Gln Leu Glu Lys His Leu Ala  
1415                    1420                    1425

Glu Met Lys Ser Ser Gly Arg Phe His Pro Val Tyr Ala  
1430                    1435                    1440

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<212> DNA  
<213> Musa acuminata spp malaccensis

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<221> CDS  
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atg gct gat gtc aca cca cag gca gcg gcg gtg ttc tcc ctg gtg aat      48  
Met Ala Asp Val Thr Pro Gln Ala Ala Val Phe Ser Leu Val Asn  
1                        5                        10                        15

gaa atc ttt aac cgg tcc atc aat ttg atc gtc gcg gaa ctc cgg ttg      96  
Glu Ile Phe Asn Arg Ser Ile Asn Leu Ile Val Ala Glu Leu Arg Leu  
20                        25                        30

cag ttg aat gcg aga gcc gag ctg aac aat ctg cag aga aca cta ttg      144  
Gln Leu Asn Ala Arg Ala Glu Leu Asn Asn Leu Gln Arg Thr Leu Leu  
35                        40                        45

agg act cac tct ctg ctc gag gag gca aag gcg agg cgg atg act gac      192  
Arg Thr His Ser Leu Leu Glu Glu Ala Lys Ala Arg Arg Met Thr Asp  
50                        55                        60

aag tct ctc gtg ctg tgg ctg atg gag ctc aag gaa tgg gcc tac gac      240  
Lys Ser Leu Val Leu Trp Leu Met Glu Leu Lys Glu Trp Ala Tyr Asp  
65                        70                        75                        80

gcc gac gac atc ctc gac gag tac gag gcc gca gca atc cga ctg aag      288  
Ala Asp Asp Ile Leu Asp Glu Tyr Glu Ala Ala Ile Arg Leu Lys  
85                        90                        95

gta aca cgc tcg acc ttc aaa cgt ctt atc gat cat gtg att ata aat      336  
Val Thr Arg Ser Thr Phe Lys Arg Leu Ile Asp His Val Ile Ile Asn  
100                        105                        110

gtt cca tta gcg cac aaa gta gca gac atc agg aaa agg ttg aac ggg      384

## DAV1172SequenceListing.txt

Val Pro Leu Ala His Lys Val	Ala Asp Ile Arg Lys Arg Leu Asn Gly		
115	120	125	
gtc act ctt gag agg gag	cta aat ctg ggt gcg ctg gaa ggg tcg cag	432	
Val Thr Leu Glu Arg Glu	Leu Asn Leu Gly Ala Leu Glu Gly Ser Gln		
130	135	140	
ccg ctt gat tcc acg aaa aga ggt gtg acc act tct ctt ctg act gaa		480	
Pro Leu Asp Ser Thr Lys Arg Gly Val Thr Ser Leu Leu Thr Glu			
145	150	155	160
tct tgt att gtc ggg cga gct caa gat aag gag aat ttg att cgg ttg		528	
Ser Cys Ile Val Gly Arg Ala Gln Asp Lys Glu Asn Leu Ile Arg Leu			
165	170	175	
ctg ttg gag ccc agc gat ggg gcg gtt cct gtt gtt cct ata gtt gga		576	
Leu Leu Glu Pro Ser Asp Gly Ala Val Pro Val Val Pro Ile Val Gly			
180	185	190	
tta gga ggg gca ggg aag acg act ctg tct cag ctt atc tt aat gac		624	
Leu Gly Ala Gly Lys Thr Thr Leu Ser Gln Leu Ile Phe Asn Asp			
195	200	205	
aag aga gtg gag gag cat ttc cca ttg aga atg tgg gtg tgt gtg tct		672	
Lys Arg Val Glu Glu His Phe Pro Leu Arg Met Trp Val Cys Val Ser			
210	215	220	
gac gat ttt gat gtg aag aga att act aga gag atc aca gag tac gcc		720	
Asp Asp Phe Asp Val Lys Arg Ile Thr Arg Glu Ile Thr Glu Tyr Ala			
225	230	235	240
acc aac gga agg ttc atg gat ctc acc aac ttg aat atg ctt caa gtt		768	
Thr Asn Gly Arg Phe Met Asp Leu Thr Asn Leu Asn Met Leu Gln Val			
245	250	255	
aat ctg aaa gag gag ata agg ggg acg aca ttt ttg ctt gtg ctg gat		816	
Asn Leu Lys Glu Glu Ile Arg Gly Thr Thr Phe Leu Leu Val Leu Asp			
260	265	270	
gat gtg tgg aac gaa gac ccc gtg aag tgg gaa agc ctg tta gcc cca		864	
Asp Val Trp Asn Glu Asp Pro Val Lys Trp Glu Ser Leu Leu Ala Pro			
275	280	285	
tta gat gcc gga gga cgg gga agc gtg gtc att gtg acg aca cag agc		912	
Leu Asp Ala Gly Gly Arg Gly Ser Val Val Ile Val Thr Thr Gln Ser			
290	295	300	
aaa aag gtc gcc gat gtc acc ggc acg atg gag cca tac gtt ctc gag		960	
Lys Lys Val Ala Asp Val Thr Gly Thr Met Glu Pro Tyr Val Leu Glu			
305	310	315	320
gag tta acg gag gat gac agt tgg tca ctc atc gag agt cac tcc ttc		1008	
Glu Leu Thr Glu Asp Asp Ser Trp Ser Leu Ile Glu Ser His Ser Phe			
325	330	335	
agg gag gcg agc tgc tct agt aca aat cct aga atg gaa gag atc ggg		1056	
Arg Glu Ala Ser Cys Ser Ser Thr Asn Pro Arg Met Glu Glu Ile Gly			
340	345	350	
agg aag ata gcc aag aag atc agt ggc cta cct tac gga gca aca gca		1104	
Arg Lys Ile Ala Lys Lys Ile Ser Gly Leu Pro Tyr Gly Ala Thr Ala			
355	360	365	

## DAVI172SequenceListing.txt

atg ggg aga tat cta aga tct aag cac gga gaa agc tag aga gaa Met Gly Arg Tyr Leu Arg Ser Lys His Gly Glu Ser Ser Trp Arg Glu 370 375 380	1152
gtc ttg gaa act gag act tgg gag atg cca ccg gct gca agt gat gtg Val Leu Glu Thr Glu Thr Trp Glu Met Pro Pro Ala Ala Ser Asp Val 385 390 395 400	1200
tta tcc gct cta agg aga agt tac gac aat cta ccc cct cag ctg aag Leu Ser Ala Leu Arg Arg Ser Tyr Asp Asn Leu Pro Pro Gln Leu Lys 405 410 415	1248
ctc tgt ttt gcc ttc tgt gct ctg ttt aca aag ggc tac agg ttt cga Leu Cys Phe Ala Phe Cys Ala Leu Phe Thr Lys Gly Tyr Arg Phe Arg 420 425 430	1296
aag gat aca ctg atc cac atg tgg ata gct caa aat ttg att caa tca Lys Asp Thr Leu Ile His Met Trp Ile Ala Gln Asn Leu Ile Gln Ser 435 440 445	1344
aca gag tcg aaa aga tcg gag gac atg gca gaa gaa tgc ttt gat gat Thr Glu Ser Lys Arg Ser Glu Asp Met Ala Glu Glu Cys Phe Asp Asp 450 455 460	1392
ttg gtc tgc aga ttc ttc ttt cgg tac tcc tgg ggc aac tat gtg atg Leu Val Cys Arg Phe Phe Arg Tyr Ser Trp Gly Asn Tyr Val Met 465 470 475 480	1440
aat gac tca gtc cat gac ctc gct cga tgg gtt tca ttg gat gaa tat Asn Asp Ser Val His Asp Leu Ala Arg Trp Val Ser Leu Asp Glu Tyr 485 490 495	1488
ttt cga gca gat gaa gac tca cca ttg cat att tca aag cca att cgt Phe Arg Ala Asp Glu Asp Ser Pro Leu His Ile Ser Lys Pro Ile Arg 500 505 510	1536
cat ttg tca tgg tgc agt gaa aga ata acc aat gtt ctt gag gat aat His Leu Ser Trp Cys Ser Glu Arg Ile Thr Asn Val Leu Glu Asp Asn 515 520 525	1584
aac act ggt gga gat gct gtc aat ccg ctc agc agt ttg cgc act ctc Asn Thr Gly Gly Asp Ala Val Asn Pro Leu Ser Ser Leu Arg Thr Leu 530 535 540	1632
ctt ttc tta ggc caa tct gag ttc cgg tcg tat cat ctt ctt gat aga Leu Phe Leu Gly Glu Ser Phe Arg Ser Tyr His Leu Leu Asp Arg 545 550 555 560	1680
atg ttc agg atg ttg agc cga atc cgt gtt ttg gat ttc agc aac tgc Met Phe Arg Met Leu Ser Arg Ile Arg Val Leu Asp Phe Ser Asn Cys 565 570 575	1728
gtc ata aga aat ttg cct tct tcg gtt gga aat ctg aaa cat ctg cgt Val Ile Arg Asn Leu Pro Ser Ser Val Gly Asn Leu Lys His Leu Arg 580 585 590	1776
tac ctg ggc ctg tct aat acg aga att cca agg ttg ccg gag tct gta Tyr Leu Gly Leu Ser Asn Thr Arg Ile Gln Arg Leu Pro Glu Ser Val 595 600 605	1824
aca cgt ctt tgc ctc ctt cag aca ttg cta cta gag ggc tgt gaa ctg Thr Arg Leu Cys Leu Leu Gln Thr Leu Leu Leu Glu Gly Cys Glu Leu 610 615 620	1872

## DAV172SequenceListing.txt

tgc agg tta cca aga agc atg agc agg ctc gtc aaa ctg agg cag ctc Cys Arg Leu Pro Arg Ser Met Ser Arg Leu Val Lys Leu Arg Gln Leu 625 630 635 640	1920
aaa gca aat cca gat gta att gcc gac ata gcc aaa gtc ggg aga ttg Lys Ala Asn Pro Asp Val Ile Ala Asp Ile Ala Lys Val Gly Arg Leu 645 650 655	1968
atc gaa ctt caa gag ctg aaa gcc tat aat gtt gac aag aaa aaa gga Ile Glu Leu Gln Glu Leu Lys Ala Tyr Asn Val Asp Lys Lys Lys Gly 660 665 670	2016
cat ggg att gca gag cta agt gca atg aat cag ctt cac ggt gat ctt His Gly Ile Ala Glu Leu Ser Ala Met Asn Gln Leu His Gly Asp Leu 675 680 685	2064
tcc att aga aac ctt caa aat gta gag aaa acg cga gag tct cgg aag Ser Ile Arg Asn Leu Gln Asn Val Glu Lys Thr Arg Glu Ser Arg Lys 690 695 700	2112
gcg agg ttg gac gag aaa cag aag ctt aag ctc ttg gat ctg cga tgg Ala Arg Leu Asp Glu Lys Gln Lys Leu Lys Leu Leu Asp Leu Arg Trp 705 710 715 720	2160
gct gac ggt agg ggt gcc gga gaa tgt gat cgt gac agg aaa ott ctt Ala Asp Gly Arg Gly Ala Gly Glu Cys Asp Arg Asp Arg Lys Val Leu 725 730 735	2208
aaa ggc ctc cga cca cat cca aac ctg aga gaa ttg agt atc aaa tac Lys Gly Leu Arg Pro His Pro Asn Leu Arg Glu Leu Ser Ile Lys Tyr 740 745 750	2256
tac gga ggc act tca tct ccg agt ttg atg acg gat cag tat ctg ccc Tyr Gly Thr Ser Ser Pro Ser Trp Met Thr Asp Gln Tyr Leu Pro 755 760 765	2304
aac atg gaa acg att cgc ctg cgt agc tgc gca agg ttg acg gaa ctc Asn Met Glu Thr Ile Arg Leu Arg Ser Cys Ala Arg Leu Thr Glu Leu 770 775 780	2352
cca tgt ctc ggt cag ctg cat atc ctt aga cat ttg cac atc gat ggg Pro Cys Leu Gly Gln Leu His Ile Leu Arg His Leu His Ile Asp Gly 785 790 795 800	2400
atg tcc caa gtq aga caa att aat ctg caa ttt tat ggc acc gga gaa Met Ser Gln Val Arg Gln Ile Asn Leu Gln Phe Tyr Gly Thr Gly Glu 805 810 815	2448
gtt tca ggt ttt cca ttg ctg gag ctc ctg aac ata cgt cgc atg ccc Val Ser Gly Phe Pro Leu Leu Glu Leu Leu Asn Ile Arg Arg Met Pro 820 825 830	2496
agt ctg gag gaa tgg tcg gaa cca cgg aga aac tgt tgc tac ttc cct Ser Leu Glu Trp Ser Glu Pro Arg Arg Asn Cys Cys Tyr Phe Pro 835 840 845	2544
cgc ctc cat aaa ctg ctg atc gag gat tgt ccc agg ctc agg aat ctg Arg Leu His Lys Leu Leu Ile Glu Asp Cys Pro Arg Leu Arg Asn Leu 850 855 860	2592
ccc tcc ctc cca cca aca ctg gaa gaa cta agg ata tca aga aca gga Pro Ser Leu Pro Pro Thr Leu Glu Glu Leu Arg Ile Ser Arg Thr Gly	2640

## DAVI172SequenceListing.txt

865	870	875	880	
cta gtt gat ctt cca gga ttc cat gga aac ggt gat gtg acg acg aat Leu Val Asp Leu Pro Gly Phe His Gly Asn Gly Asp Val Thr Thr Asn 885 890 895				2688
gtt tcc ctt tct ttg cat gtt tcg gag tgt cga gaa ctg aga tcc Val Ser Leu Ser Ser Leu His Val Ser Glu Cys Arg Glu Leu Arg Ser 900 905 910				2736
cta agc gaa gga ttg ttg cag cac aac ctc gtc gcc ctc aag aca gcg Leu Ser Glu Gly Leu Leu Gln His Asn Leu Val Ala Leu Lys Thr Ala 915 920 925				2784
gca ttt acc gat tgt gat tct ctt gag ttt ttg ccg gcg gaa gga ttc Ala Phe Thr Asp Cys Asp Ser Leu Glu Phe Leu Pro Ala Glu Gly Phe 930 935 940				2832
aga aca gcc att tca ctt gaa tca ttg ata atg act aat tgt cca ctg Arg Thr Ala Ile Ser Leu Glu Ser Leu Ile Met Thr Asn Cys Pro Leu 945 950 955 960				2880
cct tgc agt ttt ctt ttg cct tcc tct ctc gag cat cta aag ttg cag Pro Cys Ser Phe Leu Leu Pro Ser Ser Leu Glu His Leu Lys Leu Gln 965 970 975				2928
cca tgc ctc tat cca aac aac aat gag gat tca ctg tca aca tgc ttc Pro Cys Leu Tyr Pro Asn Asn Asn Glu Asp Ser Leu Ser Thr Cys Phe 980 985 990				2976
gag aac ctc aca tct ctt tcc ttc ttg gac atc aaa gat tgt cca aat Glu Asn Leu Thr Ser Leu Ser Phe Leu Asp Ile Lys Asp Cys Pro Asn 995 1000 1005				3024
ctg tca tca ttt cca ccg ggt cct cta tgt cag cta tca gca ctc Leu Ser Ser Phe Pro Pro Gly Pro Leu Cys Gln Leu Ser Ala Leu 1010 1015 1020				3069
caa cat ttg tcc ctc gtc aat tgc cag agg cta caa tct att ggc Gln His Leu Ser Leu Val Asn Cys Gln Arg Leu Gln Ser Ile Gly 1025 1030 1035				3114
ttc cag gca ctc acc tcc ctc gaa agc ttg aca att cag aac tgc Phe Gln Ala Leu Thr Ser Leu Glu Ser Leu Thr Ile Gln Asn Cys 1040 1045 1050				3159
cct cgc ctc acc atg tca cac agt ttg gtt gag gtg aat aac tct Pro Arg Leu Thr Met Ser His Ser Leu Val Glu Val Asn Asn Ser 1055 1060 1065				3204
tcc gat aca ggg ctc ggc ttt aat atc act cga tgg atg cgc aga Ser Asp Thr Gly Leu Ala Phe Asn Ile Thr Arg Trp Met Arg Arg 1070 1075 1080				3249
cga aca ggt gac gac ggc ttg atg ctc aga cac cga gca caa aat Arg Thr Gly Asp Asp Gly Leu Met Leu Arg His Arg Ala Gln Asn 1085 1090 1095				3294
gat tca ttt ttc ggg gga ctt ctg cca cac ctc acc ttc ctc cag Asp Ser Phe Phe Gly Gly Leu Leu Gln His Leu Thr Phe Leu Gln 1100 1105 1110				3339
ttt cta aag atc tgc cag tgt cca caa ctc gta acc ttc acc ggc				3384

DAVII172SequenceListing.txt  
Phe Leu Lys Ile Cys Gln Cys Pro Gln Leu Val Thr Phe Thr Gly  
1115 1120 1125

gaa gag gaa gag aag tgg aga aac ctt act tct ctt caa att ctg  
Glu Glu Glu Glu Lys Trp Arg Asn Leu Thr Ser Leu Gln Ile Leu  
1130 1135 1140

cac atc gtt gat tgt cca aac ctg gag gta ctg cct gca aac ttg  
His Ile Val Asp Cys Pro Asn Leu Glu Val Leu Pro Ala Asn Leu  
1145 1150 1155

caa agc ctc tgc tcc ctc agc acc ttg tac atc gtc aga tgc cca  
Gln Ser Leu Cys Ser Leu Ser Thr Leu Tyr Ile Val Arg Cys Pro  
1160 1165 1170

aga atc cat gcg ttt cct ccc gga ggt gtc agc atg tcc ctg gca  
Arg Ile His Ala Phe Pro Pro Gly Gly Val Ser Met Ser Leu Ala  
1175 1180 1185

cat ttg gtc atc cat gaa tgc cct cag ctg tgt cag cga tgt gat  
His Leu Val Ile His Glu Cys Pro Gln Leu Cys Gln Arg Cys Asp  
1190 1195 1200

cca ccg gga ggt gat gat tgg ccc tta ata gct aat gta cca aga  
Pro Pro Gly Gly Asp Asp Trp Pro Leu Ile Ala Asn Val Pro Arg  
1205 1210 1215

ata tgt ctt gga agg act cat cca tgt cgc tgt agc acc acc tga  
Ile Cys Leu Gly Arg Thr His Pro Cys Arg Cys Ser Thr Thr  
1220 1225 1230

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<211> 1232

<212> PRT

<213> Musa acuminata spp malaccensis

<400> 4

Met Ala Asp Val Thr Pro Gln Ala Ala Ala Val Phe Ser Leu Val Asn  
1 5 10 15

Glu Ile Phe Asn Arg Ser Ile Asn Leu Ile Val Ala Glu Leu Arg Leu  
20 25 30

Gln Leu Asn Ala Arg Ala Glu Leu Asn Asn Leu Gln Arg Thr Leu Leu  
35 40 45

Arg Thr His Ser Leu Leu Glu Glu Ala Lys Ala Arg Arg Met Thr Asp  
50 55 60

Lys Ser Leu Val Leu Trp Leu Met Glu Leu Lys Glu Trp Ala Tyr Asp  
65 70 75 80

Ala Asp Asp Ile Leu Asp Glu Tyr Glu Ala Ala Ala Ile Arg Leu Lys  
85 89 90 95

## DAV1172SequenceListing.txt

Val Thr Arg Ser Thr Phe Lys Arg Leu Ile Asp His Val Ile Ile Asn  
100 105 110

Val Pro Leu Ala His Lys Val Ala Asp Ile Arg Lys Arg Leu Asn Gly  
115 120 125

Val Thr Leu Glu Arg Glu Leu Asn Leu Gly Ala Leu Glu Gly Ser Gln  
130 135 140

Pro Leu Asp Ser Thr Lys Arg Gly Val Thr Thr Ser Leu Leu Thr Glu  
145 150 155 160

Ser Cys Ile Val Gly Arg Ala Gln Asp Lys Glu Asn Leu Ile Arg Leu  
165 170 175

Leu Leu Glu Pro Ser Asp Gly Ala Val Pro Val Val Pro Ile Val Gly  
180 185 190

Leu Gly Gly Ala Gly Lys Thr Thr Leu Ser Gln Leu Ile Phe Asn Asp  
195 200 205

Lys Arg Val Glu Glu His Phe Pro Leu Arg Met Trp Val Cys Val Ser  
210 215 220

Asp Asp Phe Asp Val Lys Arg Ile Thr Arg Glu Ile Thr Glu Tyr Ala  
225 230 235 240

Thr Asn Gly Arg Phe Met Asp Leu Thr Asn Leu Asn Met Leu Gln Val  
245 250 255

Asn Leu Lys Glu Glu Ile Arg Gly Thr Thr Phe Leu Leu Val Leu Asp  
260 265 270

Asp Val Trp Asn Glu Asp Pro Val Lys Trp Glu Ser Leu Leu Ala Pro  
275 280 285

Leu Asp Ala Gly Gly Arg Gly Ser Val Val Ile Val Thr Thr Gln Ser  
290 295 300

Lys Lys Val Ala Asp Val Thr Gly Thr Met Glu Pro Tyr Val Leu Glu  
305 310 315 320

Glu Leu Thr Glu Asp Asp Ser Trp Ser Leu Ile Glu Ser His Ser Phe  
325 330 335

Arg Glu Ala Ser Cys Ser Ser Thr Asn Pro Arg Met Glu Glu Ile Gly  
340 345 350

DAV1172SequenceListing.txt

Arg Lys Ile Ala Lys Lys Ile Ser Gly Leu Pro Tyr Gly Ala Thr Ala  
355 360 365

Met Gly Arg Tyr Leu Arg Ser Lys His Gly Glu Ser Ser Trp Arg Glu  
370 375 380

Val Leu Glu Thr Glu Thr Trp Glu Met Pro Pro Ala Ala Ser Asp Val  
385 390 395 400

Leu Ser Ala Leu Arg Arg Ser Tyr Asp Asn Leu Pro Pro Gln Leu Lys  
405 410 415

Leu Cys Phe Ala Phe Cys Ala Leu Phe Thr Lys Gly Tyr Arg Phe Arg  
420 425 430

Lys Asp Thr Leu Ile His Met Trp Ile Ala Gln Asn Leu Ile Gln Ser  
435 440 445

Thr Glu Ser Lys Arg Ser Glu Asp Met Ala Glu Glu Cys Phe Asp Asp  
450 455 460

Leu Val Cys Arg Phe Phe Arg Tyr Ser Trp Gly Asn Tyr Val Met  
465 470 475 480

Asn Asp Ser Val His Asp Leu Ala Arg Trp Val Ser Leu Asp Glu Tyr  
485 490 495

Phe Arg Ala Asp Glu Asp Ser Pro Leu His Ile Ser Lys Pro Ile Arg  
500 505 510

His Leu Ser Trp Cys Ser Glu Arg Ile Thr Asn Val Leu Glu Asp Asn  
515 520 525

Asn Thr Gly Gly Asp Ala Val Asn Pro Leu Ser Ser Leu Arg Thr Leu  
530 535 540

Leu Phe Leu Gly Gln Ser Glu Phe Arg Ser Tyr His Leu Leu Asp Arg  
545 550 555 560

Met Phe Arg Met Leu Ser Arg Ile Arg Val Leu Asp Phe Ser Asn Cys  
565 570 575

Val Ile Arg Asn Leu Pro Ser Ser Val Gly Asn Leu Lys His Leu Arg  
580 585 590

Tyr Leu Gly Leu Ser Asn Thr Arg Ile Gln Arg Leu Pro Glu Ser Val  
595 600 605

DAV1172SequenceListing.txt

Thr Arg Leu Cys Leu Leu Gln Thr Leu Leu Leu Glu Gly Cys Glu Leu  
610 615 620

Cys Arg Leu Pro Arg Ser Met Ser Arg Leu Val Lys Leu Arg Gln Leu  
625 630 635 640

Lys Ala Asn Pro Asp Val Ile Ala Asp Ile Ala Lys Val Gly Arg Leu  
645 650 655

Ile Glu Leu Gln Glu Leu Lys Ala Tyr Asn Val Asp Lys Lys Lys Gly  
660 665 670

His Gly Ile Ala Glu Leu Ser Ala Met Asn Gln Leu His Gly Asp Leu  
675 680 685

Ser Ile Arg Asn Leu Gln Asn Val Glu Lys Thr Arg Glu Ser Arg Lys  
690 695 700

Ala Arg Leu Asp Glu Lys Gln Lys Leu Lys Leu Leu Asp Leu Arg Trp  
705 710 715 720

Ala Asp Gly Arg Gly Ala Gly Glu Cys Asp Arg Asp Arg Lys Val Leu  
725 730 735

Lys Gly Leu Arg Pro His Pro Asn Leu Arg Glu Leu Ser Ile Lys Tyr  
740 745 750

Tyr Gly Gly Thr Ser Ser Pro Ser Trp Met Thr Asp Gln Tyr Leu Pro  
755 760 765

Asn Met Glu Thr Ile Arg Leu Arg Ser Cys Ala Arg Leu Thr Glu Leu  
770 775 780

Pro Cys Leu Gly Gln Leu His Ile Leu Arg His Leu His Ile Asp Gly  
785 790 795 800

Met Ser Gln Val Arg Gln Ile Asn Leu Gln Phe Tyr Gly Thr Gly Glu  
805 810 815

Val Ser Gly Phe Pro Leu Leu Glu Leu Leu Asn Ile Arg Arg Met Pro  
820 825 830

Ser Leu Glu Glu Trp Ser Glu Pro Arg Arg Asn Cys Cys Tyr Phe Pro  
835 840 845

Arg Leu His Lys Leu Leu Ile Glu Asp Cys Pro Arg Leu Arg Asn Leu  
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850

DAVI172SequenceListing.txt  
855 860

Pro Ser Leu Pro Pro Thr Leu Glu Glu Leu Arg Ile Ser Arg Thr Gly  
865 870 875 880

Leu Val Asp Leu Pro Gly Phe His Gly Asn Gly Asp Val Thr Thr Asn  
885 890 895

Val Ser Leu Ser Ser Leu His Val Ser Glu Cys Arg Glu Leu Arg Ser  
900 905 910

Leu Ser Glu Gly Leu Leu Gln His Asn Leu Val Ala Leu Lys Thr Ala  
915 920 925

Ala Phe Thr Asp Cys Asp Ser Leu Glu Phe Leu Pro Ala Glu Gly Phe  
930 935 940

Arg Thr Ala Ile Ser Leu Glu Ser Leu Ile Met Thr Asn Cys Pro Leu  
945 950 955 960

Pro Cys Ser Phe Leu Leu Pro Ser Ser Leu Glu His Leu Lys Leu Gln  
965 970 975

Pro Cys Leu Tyr Pro Asn Asn Asn Glu Asp Ser Leu Ser Thr Cys Phe  
980 985 990

Glu Asn Leu Thr Ser Leu Ser Phe Leu Asp Ile Lys Asp Cys Pro Asn  
995 1000 1005

Leu Ser Ser Phe Pro Pro Gly Pro Leu Cys Gln Leu Ser Ala Leu  
1010 1015 1020

Gln His Leu Ser Leu Val Asn Cys Gln Arg Leu Gln Ser Ile Gly  
1025 1030 1035

Phe Gln Ala Leu Thr Ser Leu Glu Ser Leu Thr Ile Gln Asn Cys  
1040 1045 1050

Pro Arg Leu Thr Met Ser His Ser Leu Val Glu Val Asn Asn Ser  
1055 1060 1065

Ser Asp Thr Gly Leu Ala Phe Asn Ile Thr Arg Trp Met Arg Arg  
1070 1075 1080

Arg Thr Gly Asp Asp Gly Leu Met Leu Arg His Arg Ala Gln Asn  
1085 1090 1095

DAV1172SequenceListing.txt  
Asp Ser Phe Phe Gly Gly Leu Leu Gln His Leu Thr Phe Leu Gln  
1100 1105 1110  
  
Phe Leu Lys Ile Cys Gln Cys Pro Gln Leu Val Thr Phe Thr Gly  
1115 1120 1125  
  
Glu Glu Glu Glu Lys Trp Arg Asn Leu Thr Ser Leu Gln Ile Leu  
1130 1135 1140  
  
His Ile Val Asp Cys Pro Asn Leu Glu Val Leu Pro Ala Asn Leu  
1145 1150 1155  
  
Gln Ser Leu Cys Ser Leu Ser Thr Leu Tyr Ile Val Arg Cys Pro  
1160 1165 1170  
  
Arg Ile His Ala Phe Pro Pro Gly Gly Val Ser Met Ser Leu Ala  
1175 1180 1185  
  
His Leu Val Ile His Glu Cys Pro Gln Leu Cys Gln Arg Cys Asp  
1190 1195 1200  
  
Pro Pro Gly Gly Asp Asp Trp Pro Leu Ile Ala Asn Val Pro Arg  
1205 1210 1215  
  
Ile Cys Leu Gly Arg Thr His Pro Cys Arg Cys Ser Thr Thr  
1220 1225 1230